

WHAT WE CLAIM IS

Sub B1  
1. An improved process for evacuating and making ready a thermally insulating jacket and in particular the thermally insulating jacket (5) of a dewar or of another cryogenic device (1), having an inner wall (2) and an outer wall (4), and having the inner space between said walls completely or partially filled with an insulating material (9), wherein said inner space also contains a moisture sorbing material (10) and a getter material (11), characterized in that said moisture sorbing material (10) is a chemical drying agent.

2. A process according to claim 1, characterized in that said chemical drying agent is provided with a  $H_2O$  vapour pressure lower than 1 Pa at room temperature and is preferably selected from barium oxide, strontium oxide, phosphorus oxide and mixtures thereof.

3. A process according to claim 1, wherein in the case no liquid hydrogen is present inside or outside said jacket, said inner space also contains a hydrogen converter, preferably selected from the oxides of osmium, iridium, ruthenium, rhodium and (most preferably) palladium, optionally admixed with BaO.

4. A process according to claim 1, characterized by the following steps:

- A. the inner space of the jacket (5) is first evacuated down to a pressure lower than 100 Pa by means of a vacuum pump;
- B. said inner space is contemporaneously exposed to said chemical drying agent (10) and optionally to aid hydrogen converter (provided no liquid hydrogen

be present inside or outside the jacket), while keeping the getter (11) in an inactivated form;

C. said inner space is evacuated farther, down to a pressure lower than 5 Pa, by means of a vacuum pump;

D. said getter (11) is activated; and

E. the jacket is isolated from the pump, by sealing the connection between said pump and the inner space of the jacket.

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10        5. A process according to claim 4, characterized in that during the exposure of step B the pumping according to step A is discontinued.

15        6. A process according to claim 4, characterized in that during the steps A and B the inner wall (2) of said dewar, or of another cryogenic device, is kept hot at a temperature not higher than 150°C and preferably 120°C, thus promoting the release of water from the insulating material (9).

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20        7. A process according to claim 4, 5 or 6, characterized in that the step B does not last more than 48 h and preferably from 2 to 48 h.

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25        8. A process according to claim 4, characterized in that said chemical drying agent (10) and said getter (11) are lying, in separate locations, against the outer wall (4) of said dewar or other cryogenic device.

30        9. A process according to claim 8, characterized in that said chemical drying agent (10) and said getter (11) are arranged in a container (12) subdivided into an inner (14) and an outer (15) zone by a porous septum (13), wherein:

- the inner zone (14) contains said getter (11);

- the outer zone (15) is communicating with the inner space containing said insulating material (9) and contains said chemical drying agent (10) which prevents the passage of water vapour through said septum (13) and towards said getter (11).

10. A process according to claim 9, characterized in that said container (12) is a vertical box having an opening at its uppermost portion and a planar septum (13).

10 11. A process according to claim 9, characterized in that said container (12) is a toroidal box having a radial or planar septum (13).

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a3 12. A process according to claim 10 or 11, characterized in that said septum (13) is horizontal.

15 Sub B4 13. A process according to claim 9, characterized in that said container (12) is a rigid, semirigid or flexible box.

20 14. A process according to claim 9, characterized in that said container (12) is made from a substantially water-free material, selected from metal, glass, ceramics and combinations thereof.

25 15. A process according to anyone of the preceding claims, characterized in that said getter (11) is selected from the alloys containing barium and titanium.

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a4 16. A process according to claim 15, characterized in that said getter (11) is an alloy having the raw formula  $BaLi_4$ .

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